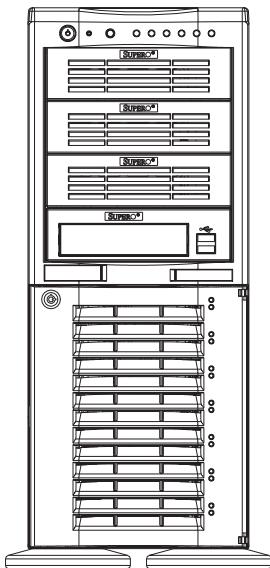


SUPERO®

SUPERSERVER 7042S-i



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 7042S-i. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 7042S-i is a high-end, dual processor 4U tower/rackmountable server based on the SC742i-420 4U rackmount server chassis and the P4DSE-M, a dual processor motherboard that supports single or dual Intel Xeon® processors of 1.5 to 2.8 GHz at a Front Side (system) Bus speed of 400 MHz and up to 4 GB PC1600 SDRAM main memory.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SUPER P4DSE-M mainboard and the SC742i-420 chassis, which make up the SuperServer 7042S-i.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 7042S-i into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 7042S-i.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the P4DSE-M motherboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC742i-420 rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: System Specifications

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Chapter 1

Introduction to the SuperServer 7042S-i

1-1 Overview

The Supermicro SuperServer 7042S-i is a high-end dual processor server that can be utilized either in a tower or in a rackmount configuration. The SuperServer 7042S-i is comprised of two main subsystems: the SC742i-420 high-end server chassis and the P4DSE-M dual Xeon processor mainboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 7042S-i.

In addition to the mainboard and chassis, various hardware components have been included with the SuperServer 7042S-i, as listed below:

- Up to two (2) 603-pin Xeon 512KB L2 cache processors*
- Two (2) CPU heatsinks* (Fan-042)
- Up to 4 GB ECC registered PC1600 DDR SDRAM main memory*
- One (1) 1.44" floppy drive
- One (1) 5.25" drive bay
- One (1) ATA66 ribbon cable for IDE CD-ROM
- One (1) ATA100 ribbon cable for IDE hard drives
- One (1) USB cable for front side access
- Seven (7) **1-inch high** IDE drive carriers
- One (1) I/O shield

You should also have received a User's Manual and Supermicro diskettes, which contains several drivers and utilities.

* Type and number depends upon the configuration ordered.

1-2 Server Chassis Features

The SuperServer 7042S-i is a scaleable server platform designed with some of today's most state-of-the-art features. The following is a general outline of the main features of the SC742i-420 server chassis.

System Power

The 7042S-i features a 420W power supply that has a redundant cooling feature. This power unit is equipped with two fans. One runs continuously while the other activates if the primary fan fails or if the temperature becomes too high, which also activates an alarm and illuminates the power fail LED. An alarm reset button is located on the back of the power supply to deactivate the power fail alarm.

Front Control Panel

The SuperServer 7042S-i's control panel provides you with system monitoring and control. LEDs indicate network activity, power supply (fan) failure, HDD activity and SCSI drive activity. The main power button, a system reset button and an NMI button are also included.

I/O Backplane

The SC742i-420 is an ATX form factor chassis that can be used as a tower or mounted as a 4U rackmount server. The I/O backplane provides seven motherboard expansion slots, one COM port, one VGA port, a parallel port, two USB ports, PS/2 mouse and keyboard ports and an Ethernet port.

Cooling System

The SC742i-420 chassis has an innovative cooling design that includes one 9-cm hot-plug redundant system cooling fan (an additional 9-cm fan is optional) and one heavy duty 12-cm exhaust fan. The power supply includes both a primary and a secondary fan. All fans operate continuously, except for the secondary power supply fan, which activates only when the primary fails or the temperature becomes too high.

Mainboard Features

At the heart of the SuperServer 7042S-i lies the P4DSE-M, a dual processor motherboard designed to provide maximum performance in cost-effective configurations. Below are the main features of the P4DSE-M.

Processors

The P4DSE-M supports single or dual Intel Xeon 512KB L2 cache processors of up to 2.8 GHz with a 400 MHz FSB. Please refer to the support section of our web site for a complete listing of supported processors (<http://www.supermicro.com/TechSupport.htm>).

Memory

The P4DSE-M has 4 184-pin DIMM slots that can support up to 4 GB of registered ECC PC1600 (DDR-200) SDRAM. Module sizes of 128MB, 256MB, 512MB and 1GB may be used to populate the DIMM slots. (PC2100 is also supported, but only at 200 MHz.)

PCI Expansion Slots

The P4DSE-M has a total of seven PCI expansion slots consisting of three 64-bit 100 MHz slots and three 32-bit 33 MHz slots.

Onboard Controllers/Ports

One floppy drive controller and two onboard ATA/100 controllers, which support up to four hard drives or ATAPI devices. The color-coded I/O ports include a VGA port, one COM port, a parallel port, two USB ports, PS/2 mouse and keyboard ports and one 10/100 Mb Ethernet port. Two front side USB ports are also included on the front of the chassis.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-4 Contacting Supermicro

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Technical Support:

Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 7042S-i up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 7042S-i system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components. The 7042S-i may be employed either as a tower or mounted in a rack as a 4U rackmount chassis. If using it as a server, please read Server Precautions in the next section and then skip ahead to Section 2-5.

2-2 Unpacking the SuperServer 7042S-i

You should inspect the box the SuperServer 7042S-i was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the SuperServer 7042S-i. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 7042S-i was shipped in may include two sets of rail assemblies, two rail mounting brackets and mounting screws needed for installing the system into a rack (optional kit). Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location:

- Leave enough clearance in front of the system to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the system to allow for sufficient airflow and ease in servicing.



Warnings and Precautions!



Rack Precautions:

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions:

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SCSI drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

2-4 Installing the SuperServer 7042S-i into a Rack

This section provides information on installing the SuperServer 7042S-i into a rack unit. (If the 7042S-i has already been mounted into a rack or if you are using it as a tower, you can skip ahead to Sections 2-5 and 2-6.) There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the 7042S-i into a rack with the rack rails provided in the rack mount kit. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails:

The 7042S-i rackmount kit (CSE-PT26 or CSE-PT26B - black) includes two rack rail assemblies. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the 7042S-i (A), an outer fixed rack rail that secures directly to the rack itself (B) and a sliding rail guide sandwiched between the two, which should remain attached to the fixed rack rail (see Figure 2-1.) The A and B rails must be detached from each other to install. Two chassis handles are also included with the rail kit.

To remove the fixed chassis rail (A), pull it out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail. Depress the locking tab to pull the inner rail completely out. Do this for both assemblies.

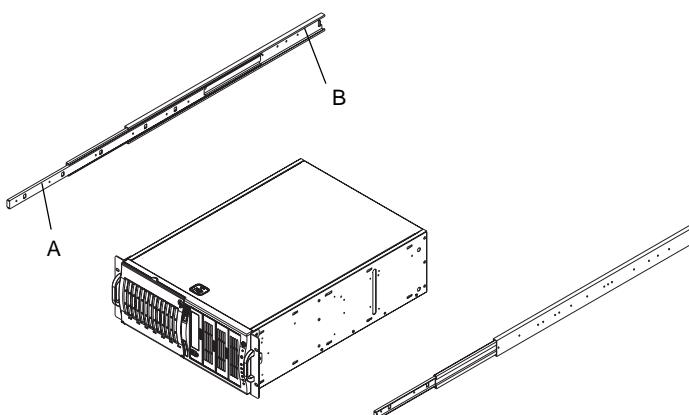


Figure 2-1. Identifying the Sections of the Rack Rails

Installing the Chassis Rails:

You will need to remove the top cover, the top/left cover and the feet to add rack rails to the chassis. First, remove the top/left cover by pushing the release tab in the center of the cover lip while pushing the cover toward the rear of the chassis (see Figure 2-2). After the cover stops, lift it off. Each chassis foot has a single screw. Remove the screw then depress the foot's locking tab from the inside of the chassis to slide the foot off. Next, remove the top cover. You should see a release tab at the middle of the lip. Push this tab toward the chassis edge while pushing the cover toward the front of the chassis. It should then lift right off. You can now attach rack rails to the top and bottom (now the sides) of the chassis. First add the rack handles as shown in Figure 2-3. Then position the fixed chassis rail sections you just removed along the side of the 7042S-i making sure the screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-4). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: As mentioned, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-2. Removing the Top/Left Cover

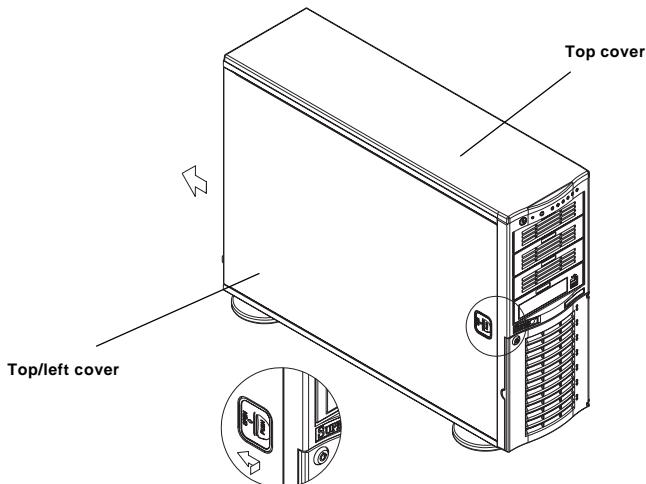
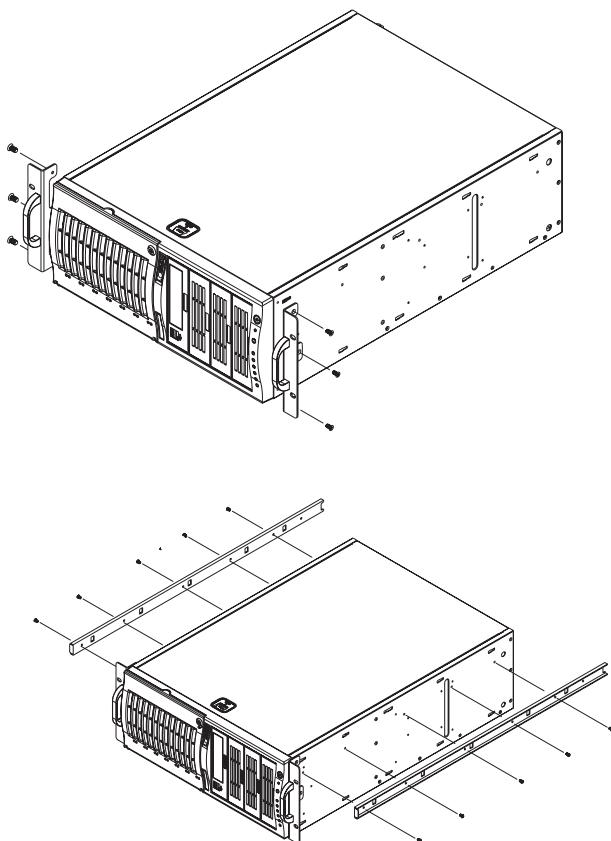


Figure 2-3. Installing the Rack Handles**Figure 2-4. Installing the Rails to the Chassis**

Installing the Rack Rails:

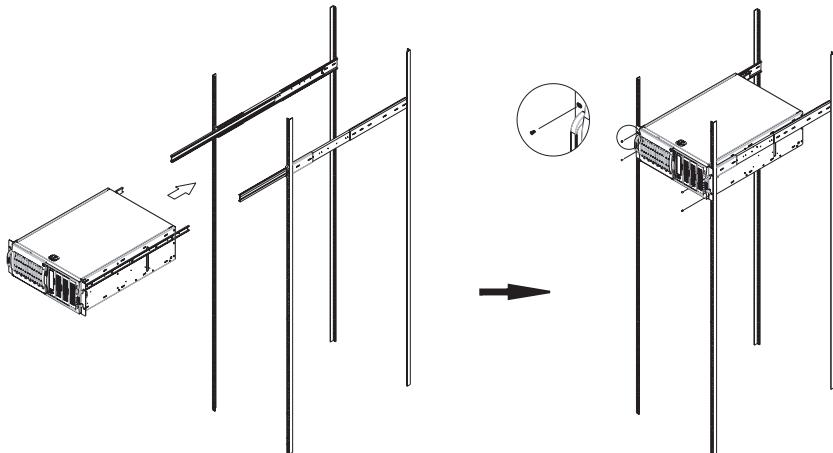
Determine where you want to place the SuperServer 7042S-i in the rack. (See Rack and Server Precautions in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack:

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting).

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumb-screws that hold the front of the server to the rack (see Figure 2-5).

Figure 2-5. Installing the Server into a Rack



2-5 Checking the Motherboard Setup

After setting up the the 7042S-i, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. Accessing the inside of the 7042S-i (see Figure 2-6):

(If rack mounted, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").) Depress the two buttons on the top (side if tower) of the chassis to release the cover. There is a large rectangular recess in the middle front of the cover to help you push the cover away from you until it stops. You can then lift the cover from the chassis to gain full access to the inside of the server.

2. Check the CPUs (processors):

You should have one or two processors already installed into the system board. Each processor should have its own heatsink attached. See Section 5-5 for instructions on processor installation.

3. Verify the proper CPU clock ratio setting:

If the CPU speed is not automatically detected you will need to set the correct speed with the BIOS Setup utility. See the CPU Speed and Frequency Ratio settings in BIOS (Chapter 7) to set the processor speed.

4. Check the system memory:

Your 7042S-i server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Section 5-6.

5. Installing add-on cards:

If desired, you can install add-on cards to the system. See Section 5-7 for details on installing PCI add-on cards.

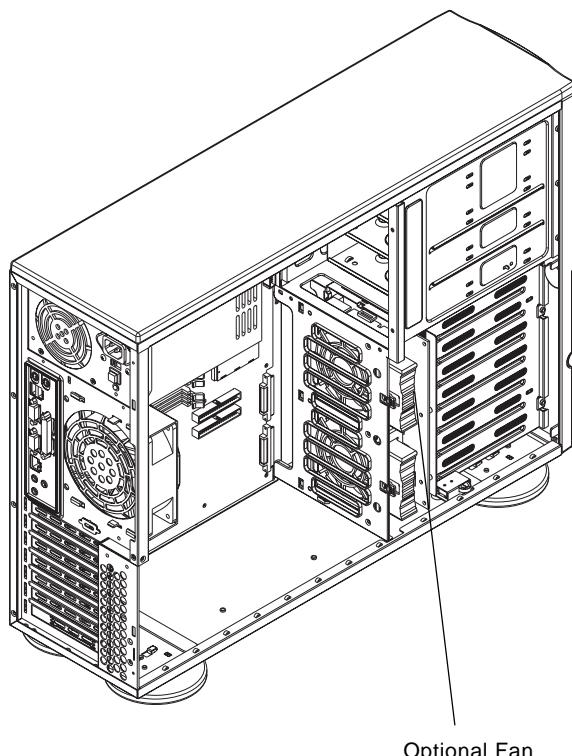


Figure 2-6. Accessing the Inside of the SuperServer 7042S-i

6. Check all cable connections and airflow:

Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Section 5-3 for details on cable connections.

2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives have been properly installed and all connections have been made.

1. Accessing the drive bays:

All drives can be accessed from the front of the server. For servicing the CD-ROM, IDE hard drives and floppy drives, you will need to remove the top/left chassis cover.

2. Installing components into the 5.25" drive bay:

To install components into the 5.25" drive bays, you must first remove the top/left chassis cover as described in the previous section. Refer to Chapter 6 for details.

3. Installing CD-ROM and floppy disk drives:

Refer to Chapter 6 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

4. Check the IDE disk drives:

Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install IDE drives, please refer to Chapter 6.

5. Check the airflow:

Airflow is provided by one 9-cm cooling fan (a second 9-cm fan is optional) and a heavy duty 12-cm exhaust fan. The system component layout was carefully designed to promote sufficient airflow through the 4U rackmount space. Also note that all power and data cables have

been routed in such a way that they do not block the airflow generated by the fans. Keep this in mind when you reroute them after working on the system.

6. Supplying power to the system:

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply units into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS). Finally, depress the power on button on the front of the chassis.

Chapter 3

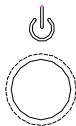
System Interface

3-1 Overview

There are several LEDs on the control panel as well as two for each SCSI drive carrier and the LAN (Ethernet) ports. These LEDs are to keep you constantly informed of the overall status of the system and the activity and health of specific components. There are also three buttons on the chassis control panel.

3-2 Control Panel Buttons

There are three push-button buttons located on the front of the chassis. These are (in order from left to right) a power on/off button, an NMI (Non-Maskable Interrupt) button and a reset button.



- **POWER:** This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.



- **NMI:** NMI stands for "non-maskable interrupt". Pressing this button issues a non-maskable interrupt to force the server into a halt state. This is used for diagnostic purposes, and allows you to perform a memory download to determine the cause of a problem.



- **RESET:** Use the reset button to reboot the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC742S-420 chassis has six LEDs that provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



- **Power:** Indicates external power is being supplied to the system's power supply unit. This LED should normally be illuminated when the system is operating.



- **HDD:** Indicates IDE channel activity. On the SuperServer 7042S-i, this LED indicates CD-ROM drive activity when flashing.



NIC1

- **NIC1:** Indicates network activity on LAN1 when flashing.



NIC2

- **NIC2:** Indicates network activity on LAN2 when flashing.



- **Overheat:** Indicates an overheat condition in the chassis. This may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. You should also check to make sure that the chassis covers are installed and that all fans are present and operating normally. Finally, verify that the heatsinks are installed properly (see Section 5-5 and Figure 5-4).



- **Power Fail:** Indicates a power supply fan has failed. The power supply will continue to operate with a secondary backup fan but will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.

3-4 LAN (Ethernet) Port LEDs

The LAN port (located beside the VGA port) has a yellow and a green LED. See the table below for the functions associated with these LEDs.

100 Mb LAN LED
Indicators

LED Color	Definition
Green	Connected
Yellow	Active

Chapter 4

System Safety

4-1 Electrical Safety Precautions



Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 7042S-i from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules and the CD-ROM and floppy drives. When disconnecting power, you should first power down the system with the operating system and then unplug the power cords of all the power supply units in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.
- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed backwards, which will reverse its polarities. The positive side of the battery should be facing up and the negative side should face the motherboard. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions



Follow these rules to ensure general safety:

- Keep the area around the SuperServer 7042S-i clean and free of clutter.
- The SuperServer 7042S-i weighs approximately 54 lbs (24.2 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- Place the chassis top/side cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and (if rackmounted) secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions



Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4 Operating Precautions



Care must be taken to assure that all chassis covers are in place when the 7042S-i is operating to ensure proper cooling. Out of warranty damage to the 7042S-i system can occur if this practice is not strictly followed.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the processors and heatsinks, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in Section 5-7. Remember to close the chassis completely when you have finished working on the motherboard to sufficiently cool and protect the system.

5-1 Handling the P4DSE-M Motherboard

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its anti-static bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 PGA Processor and Heatsink Installation



When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

IMPORTANT: Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket **before** you install the heatsink. The P4DSE-M can support either one or two Xeon 512KB L2 cache processors of 2.4 GHz+. If installing one processor only, install it into CPU socket #1.

1. Lift the lever on the CPU socket.

Lift the lever completely or you will damage the CPU socket when power is applied. (Install a processor into CPU #1 socket first.)

Socket lever



2. Insert the CPU into the socket. Make sure that pin 1 of the CPU is seated on pin 1 of the socket (both corners are marked with a triangle). When using only one CPU, install it into CPU socket #1 (CPU socket #2 is automatically disabled if only one CPU is used).

Pin 1

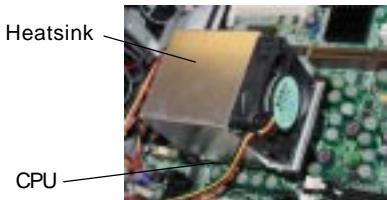


3. Press the lever down until you hear it *click* into the locked position.

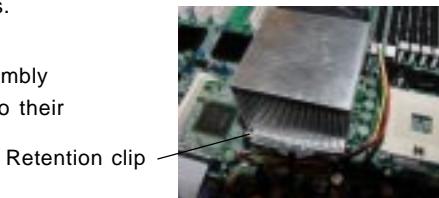
Socket lever in locked position



4. Apply the proper amount of thermal glue to the CPU thermal plate and place the heatsink/fan assembly on top of the CPU with the fan toward the rear of the chassis (note arrow on top of heatsink). If using an Intel-boxed processor, the fan must be mounted on top due to space restrictions.



5. Secure the heatsink/fan assembly by locking the retention clips into their proper position.



6. Connect the three wires of the CPU fan to the respective CPU fan connector. Make sure you route the wires so they are away from the fan blades and do not impede airflow through the chassis. If installing two processors, repeat these steps to install the second processor in the CPU #2 slot.

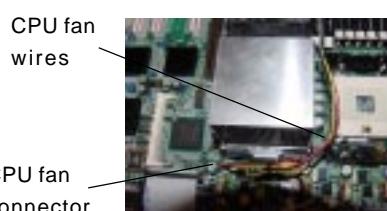
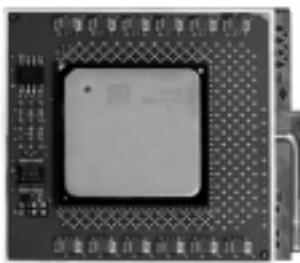
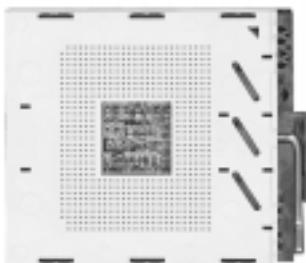
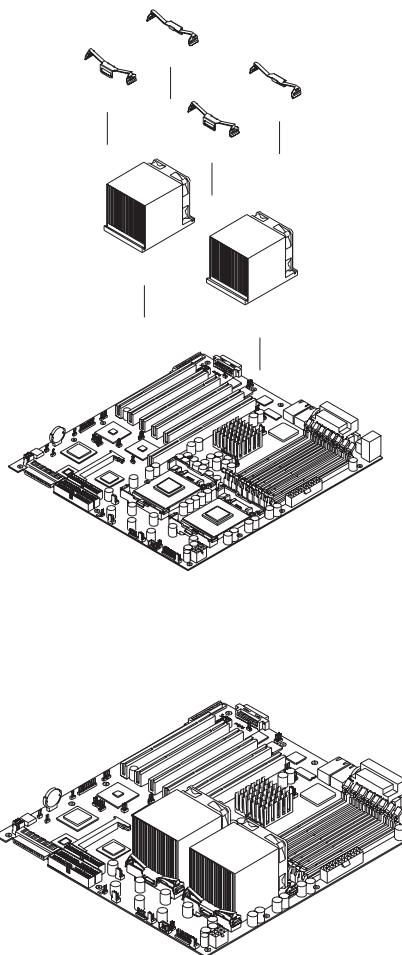


Figure 5-1. PGA Socket: Empty and with Processor Installed



Warning! Make sure you lift the lever completely when installing the CPU. If the lever is only partly raised, damage to the socket or CPU may result.



**Figure 5-2. Heatsink/Fan Installation
(motherboard shown is not the P4DSE-M)**

5-3 Connecting Cables

Now that the processors and heatsinks are installed, the next step is to install memory and connect the cables to the motherboard. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system yourself, keep the airflow in mind when routing the cables. The following data cables (with their motherboard connector locations noted) should be connected. See the motherboard layout figure in this chapter for connector locations. See Section 5-8 for data cable pin definitions.

- IDE Device Cables (J24 and J25)
- Floppy Drive Cable (J28)
- Control Panel Cable (JF1, see next page)

Connecting Power Cables

The P4DSE-M has a 24-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. The ATX power connector is also keyed to accept 20-pin power connectors if the power supply you are using has that type. See Section 5-8 for power connector pin definitions.

In addition to the primary power connector just mentioned, you must also connect the 8-pin secondary "PWR_SEC" connector to your power supply. This is a required connection.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-3 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single ribbon cable to simplify their connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See Section 5-8 for details and pin descriptions of JF1.

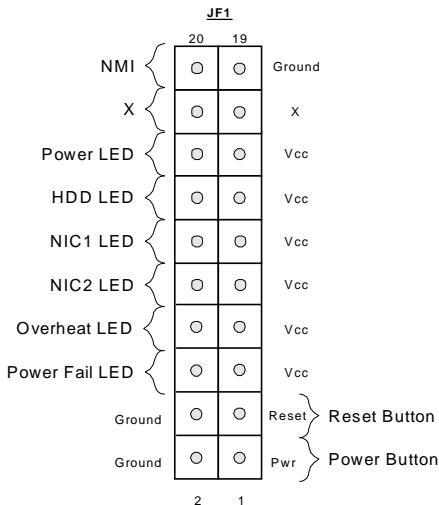


Figure 5-3. JF1: Front Control Panel Header Pins

5-4 Installing Memory

Note: Check the Supermicro web site for recommended memory modules:
http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

DIMM Installation (See Figure 5-4)

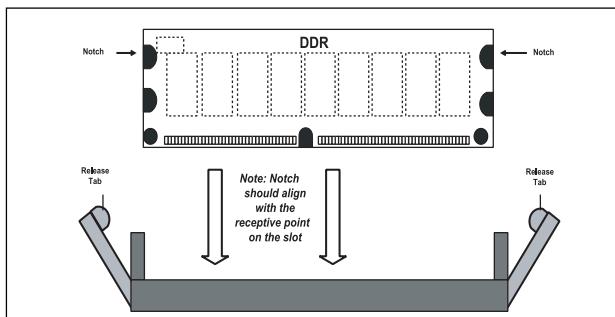
1. Insert one to four memory modules. Memory is not interleaved, so you can add any number of DIMMs into the slots in any order.
2. Insert each DIMM module into its slot. Note the notch at the bottom of the module to prevent inserting the module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for more modules as desired.

Support

The P4DSE supports up to 4 GB of ECC registered PC1600 (DDR-200) SDRAM memory. PC2100 memory is supported but only at 200 MHz (PC1600 speed).

See Figures 5-4a and 5-4b for installing and removing memory modules. module incorrectly.

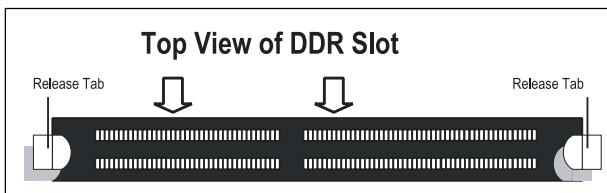
Figure 5-4a. Side View of DIMM Installation into Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notches.

To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Figure 5-4b. Top View of DIMM Slot



5-5 Adding PCI Cards

1. PCI expansion slots:

The P4DSE-M system board has three 64-bit 100 MHz PCI-X and three 32-bit 33 MHz PCI slots. The backplane of the 7042S-i has seven I/O slots that allows you to have a full complement of PCI cards installed on the system.

2. PCI card installation:

Before installing a PCI add-on card, make sure you choose the correct slot for the type of card you are installing (see step 1, above). Begin by removing the I/O shield from the backplane of the server corresponding to the PCI slot you wish to populate. Insert the card into the slot on the motherboard, pushing down with your thumbs evenly on both sides of the card. Finish by using a screw to secure the top of the card shield to the chassis. The I/O shields protect the motherboard and its components from EMI (electromagnetic interference) and aids in proper ventilation of the server, so make sure there is always a shield covering each slot.

5-6 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-5 below for the colors and locations of the various I/O ports.

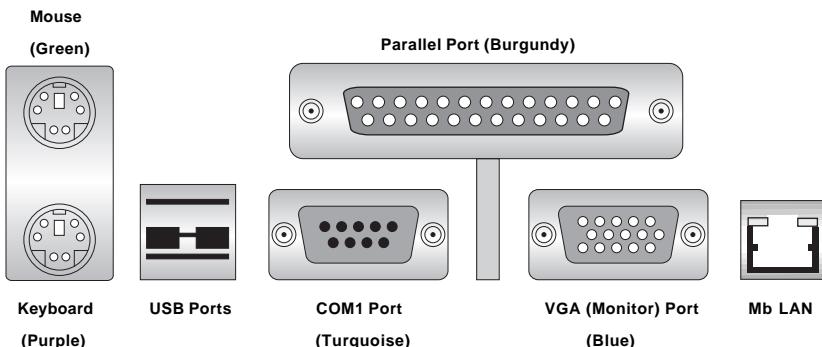
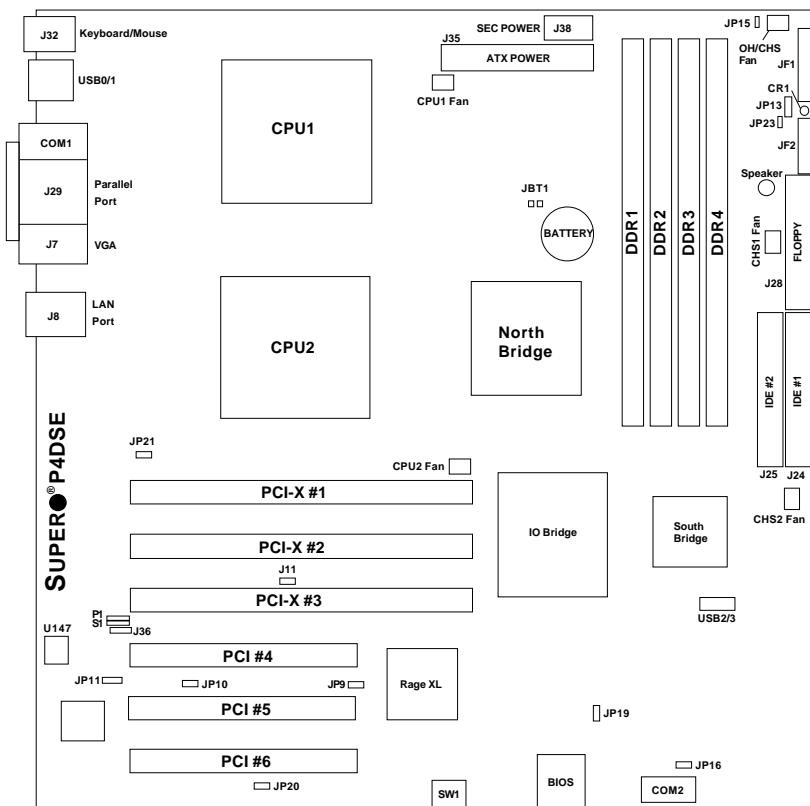


Figure 5-5. P4DSE-M Rear Panel I/O Ports

5-7 Motherboard Details

Figure 5-6. SUPER P4DSE-M Layout
(not drawn to scale)



Note:DIP Switch 1 sets the processor speed.
Jumpers not noted are for test purposes only.
IPMI is an optional feature.

P4DSE-M Quick Reference

Jumper	Description	Default Setting
JB1	CMOS Clear	See Chapter 2
JP9	VGA Enable/Disable	Pins 1-2 (Enabled)
JP10	Mb LAN Enable/Disable	Pins 1-2 (Enabled)
JP15	Fan Status Select	Open (OH Condition)
JP19	Watch Dog Enable/Disable	Open (Disabled)
JP20	Main Power Override	Off (Normal)
JP21	Fan Detection Select	Open (CPU1/2,CHS)
J11	33 MHz PCI Enable/Disable	Open (Disabled)
P1, S1	PCI-X Speed Settings	See page 2-19

Connector	Description
COM1/COM2	COM1/COM2 Serial Ports
CPU/CHS/OH FAN	CPU/Chassis/Overheat Fan Headers
CPU1/CPU2	CPU 1 and CPU2 Sockets
DDR1-DDR4	Memory (SDRAM) Slots
JF1	Front Control Panel Headers
JF2	ChInt/NMI/HD LED/PWR LED Headers
JP11	Wake-on-LAN Header
JP13	Power Supply Fail Header
JP16	Chassis Intrusion Header
JP23	Power Supply Fail Alarm Reset Header
J7	VGA Display (Monitor) Port
J8	Mb Ethernet Port
J24, J25	IDE Hard Disk Drive Connectors
J28	Floppy Disk Drive Connector
J29	Parallel Printer Port
J32	PS/2 Keyboard/Mouse Ports
J35	Primary ATX Power Connector
J36	SMB Header
J38	Secondary ATX Power Connector
USB0/1	Universal Serial Bus Ports
USB2/3	Universal Serial Bus Headers
U147	POST Messaging Voice BIOS (future option)

* The Secondary 12v 8-pin ATX power connector at J15 must also be connected to your power supply.

5-8 Connector Definitions

ATX Power Connection

The power supply connector (at J35) meets the SSI (Superset ATX) 24-pin specification, however it also supports a 20-pin power supply connector. Make sure that the orientation of the PS connector is correct. See the table on the right for pin definitions.

**24-pin ATX Power Supply Connector (J35)
Pin Definitions**

Pin Number	Definition	Pin Number	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON#	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res(NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

PWR_SEC Connection

In addition to the Primary ATX power connector (above), the Secondary 12v 8-pin PWR_SEC connector at J38 must also be connected to your power supply. See the table on the right for pin definitions.

8-Pin +12v Power Supply Connector (J38)

Pins	Definition
1 thru 4	Ground
5 thru 8	+12v

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

PWR_LED Pin Definitions (JF1)

Pin Number	Definition
15	+5V
16	Control

HDD LED

The HDD LED (for IDE Hard Disk Drives) connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to these pins to display disk activity. Refer to the table on the right for pin definitions.

(IDE) HDD LED Pin Definitions (JF1)

Pin Number	Definition
13	+5V
14	HD Active

NIC2 LED

The NIC2 LED connection is located on pins 9 and 10 of JF1. This connection is not used on the 7042S-i since there is only one LAN port.

NIC2 LED Pin Definitions (JF1)

Pin Number	Definition
9	+5V
10	GND

NIC1 LED

The NIC1 (Network Interface Controller for Mb LAN) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)

Pin Number	Definition
11	+5V
12	GND

Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

Overheat (OH) LED Pin Definitions (JF1)

Pin Number	Definition
7	+5V
8	GND

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)

Pin Number	Definition
5	Control
6	GND

Reset

The Reset connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Pin Definitions (JF1)

Pin Number	Definition
3	Reset
4	Ground

PWR_ON

The PWR_ON connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

**PWR_ON Connector
Pin Definitions
(JF1)**

Pin Number	Definition
1	PW_ON
2	Ground

Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located beside the keyboard/mouse ports. USB0 is the bottom connector and USB1 is the top connector. See the table on the right for pin definitions.

**Universal Serial Bus Pin Definitions
USB0 USB1**

Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Extra Universal Serial Bus Connection (USB2/3)

Two additional USB headers on the motherboard can provide convenient front side USB access. The odd numbered pins (toward the DIMM slots) are for USB2 and the even numbered pins are for USB3. You will need a USB cable (not included) to use each of these connections. Refer to the tables on the right for pin definitions.

USB2 Pin Definitions

Pin Number	Definition
1	Power
3	-
5	+
7	Ground
9	Key

USB3 Pin Definitions

Pin Number	Definition
2	Power
4	-
6	+
8	Ground
10	NC

NC = No Connection

Serial Ports

The COM1 serial port is located under the parallel port (see Figure 2-3). See the table on the right for pin definitions. The COM2 connector is a header located near the BIOS chip on the motherboard.

**Serial Port Pin Definitions
(COM1, COM2)**

Pin Number	Definition	Pin Number	Definition
1	DCD	6	CTS
2	DSR	7	DTR
3	Serial In	8	RI
4	RTS	9	Ground
5	Serial Out	10	NC

PS/2 Keyboard and Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J32. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3.)

**PS/2 Keyboard
and Mouse Port
Pin Definitions
(J32)**

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

NC = No Connection

Fan Headers*

The motherboard has two CPU, three Chassis and one Chassis/Overheat fan headers. See the table on the right for pin definitions.

**Fan Header Pin Definitions
(CPU/CHS/OH Fans)**

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

Caution: These fan headers are DC power.

LAN (Ethernet) Port

An Ethernet port is located beside the VGA port on the IO backplane. This port accepts RJ45 type cables. See the next section for a description of the LEDs on the LAN port.



HD LED Indicator

An HD LED connector is located on JF2 (see Figure 2-4). This LED indicates activity on any hard drive (IDE, SCSI or CD-ROM).

Chassis Intrusion

A Chassis Intrusion header is located at JF2 and another on JP16. Attach the appropriate connector here to inform you of a chassis intrusion condition.

Power LED

The Power LED connection on JF2 (see Figure 2-4) is used to inform you that power is being supplied to the motherboard.

Wake-On-LAN

The Wake-On-LAN header is designated JP11. See the table on the right for pin definitions. You must have a LAN card with a Wake-on-LAN connector and cable to use this feature.

Wake-On-LAN Pin Definitions (JP11)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

SMB

An SMB (System Management Bus) header is located at J36. Connect the appropriate cable here to utilize SMB on your system.

SMB Header Pin Definitions (J36)

Pin Number	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Power Supply Fail Header

Connect a cable from your power supply to the JP13 header to provide warning of power supply failure. The warning signal is passed through the Power Fail LED pin on JF1 to provide indication of a power failure on the chassis.

Note: This feature is only available when using triple redundant Supermicro power supplies. See the table on the right for pin definitions.

**Power Supply Fail Header
Pin Definitions (JP13)**

Pin Number	Definition
1	P/S 1 Fail Signal
2	P/S 2 Fail Signal
3	P/S 3 Fail Signal
4	Reset (from MB)

Power Supply Fail Alarm Reset Header

Connect a cable from your power supply to the JP23 header to provide you with a reset switch for the power supply fail alarm.

Note: This feature is only available when using triple redundant Supermicro power supplies.

5-9 Onboard Indicators

LAN Port LEDs

The Ethernet port (located beside the VGA port) has a yellow and a green LED. See the table to the right for the functions associated with these LEDs.

Mb LAN LED Indicators

LED Color	Definition
Green	Connected
Yellow	Active

CR1 LED

CR1 is an onboard LED that serves as a power indicator. It is located between JF1 and JF2. See the table on the right for the meaning of each of the three colors displayed by CR1.

Onboard LED Power Indicator (CR1)

LED Color	Definition
Green	Power On
Yellow	Standby Mode
Red	CPU Error

5-10 DIP Switch Settings

DIP Switch 1: Processor Speed

The red "DIP" switch labeled SW1 has four individual switches, which are used to set the speed of the processor.

The table on the right shows you the switch settings for the various speeds your processor may be able to run at. (This table is also silkscreened on the motherboard.)

Note: Most Intel processors have a fixed Core/Bus ratio that overwrites the setting of DIP Switch 1.

Processor Speed Selection
(DIP Switch 1)

CPU	SW #1	SW #2	SW #3	SW #4
1.3 GHz	ON		ON	
1.4 GHz	ON	ON	ON	
1.5 GHz	ON	ON	ON	
1.6 GHz	ON			ON
1.7 GHz	ON			ON
1.8 GHz	ON	ON		ON
1.9 GHz	ON	ON		ON
2.0 GHz	ON		ON	ON
2.1 GHz	ON		ON	ON
2.2 GHz	ON	ON	ON	ON
2.4 GHz	ON	ON	ON	ON

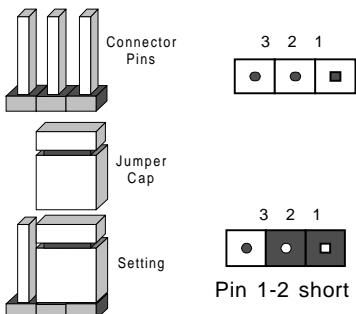
< Default

5-11 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins. "Off" means open with no jumper cap included for those pins.



CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this jumper consists of contact pads to prevent accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. JBT1 is located near the battery on the motherboard.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS. Do not use the PW_ON connector to clear CMOS.

VGA Enable/Disable

JP9 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

**VGA Enable/Disable
Jumper Settings
(JP9)**

Jumper Position	Definition
1-2	Enabled
2-3	Disabled

Fan Status Select

JP15 allows you to change the status of the Overheat/Chassis fan to either activate only during an overheat condition (set in BIOS) or to remain active at all times. The default position is open. See the table on the right for jumper settings.

**Fan Status Select
Jumper Settings (JP15)**

Jumper Position	Definition
Open	Overheat
Closed	Always On

Fan Detection Select

JP21 allows you to select to detect the RPM of either the Chassis 1 and 2 and Overheat fans or the CPU1, 2 and Chassis fans. The default position is open. See the table on the right for jumper settings.

**Fan Detection Select
Jumper Settings (JP21)**

Jumper Position	Definition
Open	CPU1, 2, CHS
Closed	CHS1, 2, OH

Watch Dog Enable

JP19 is used to enable or disable the Watch Dog function. This jumper is used together with the Watch Dog enable function in BIOS. Enable both the jumper and the BIOS setting to use the Watch Dog feature. See the table on the right for pin definitions.

**Watch Dog Enable
Jumper Settings (JP19)**

Jumper Position	Definition
Open	Disabled
Closed	Enabled

PCI-X Bus Speed Settings

Jumpers P1 and S1 are used to set the speed for the two PCI-X buses on the P4DSE. See the table on the right for jumper settings.

PCI-X Buses:

- P1: Bus for PCI-X slots #1 and #2
- S1: Bus for PCI-X slot #3

**PCI-X Slot Bus Speed Settings
Pin Definitions (P1, S1)**

P1 (#1, 2)	S1 (#3)	Speed
Pins 1-2	Pins 1-2	66 MHz PCI
Pins 2-3	Pins 2-3	66 MHz PCI-X
Pins 3-4	Pins 3-4	100 MHz PCI-X
* See Note	Pins 4-5	133 MHz PCI-X

***Note: PCI-X slots #1 & #2 share a bus and so cannot be set to 133 MHz.**

Default Settings:

Slot #1 and #2 to 100 MHz PCI-X,
slot #3 to 133 MHz

133 MHz Operation:

PCI-X slot #3 can be set to 133 MHz operation on the P4DSE.

33 MHz PCI Enable/Disable

If you wish to use 33 MHz PCI cards, close J11 to force the P1 bus (for the PCI-X#1 and PCI-X#2 slots) to run at 33 MHz. See the table on the right for jumper settings.

**33 MHz PCI
Enable/Disable
Jumper Settings
(J11)**

Jumper Position	Definition
Open	Disabled
Closed	33 MHz PCI

Note: if you force the slots(s) to 33 MHz, you must set the P1 bus speed jumper (above) to pins 1-2.

Mb LAN Enable/Disable

Change the setting of jumper JP10 to enable or disable the Mb LAN port or NIC (Network Interface Card) on the motherboard. See the table on the right for jumper settings. The default setting is pins 1-2.

**Mb LAN
Enable/Disable
Jumper Settings
(JP10)**

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

5-12 Parallel Port, Floppy and Hard Disk Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Parallel Port Connector

The parallel port is located on J29.

See the table below right for pin definitions.

**Parallel (Printer) Port Pin Definitions
(J29)**

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on J28. See the table below for pin definitions.

**Floppy Connector Pin Definitions
(JP28)**

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Connectors

There are no jumpers to configure the onboard IDE#1 and #2 connectors (J24 and J25, respectively). See the table on the right for pin definitions.

**IDE Connector Pin Definitions
(J24, J25)**

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

5-13 Installing Software Drivers

After all the hardware has been installed you must install the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-7 should appear. (If this display does not appear, double click on the "My Computer" icon and then on the icon representing your CD-ROM drive. Finally, double click on the "Setup" icon.)

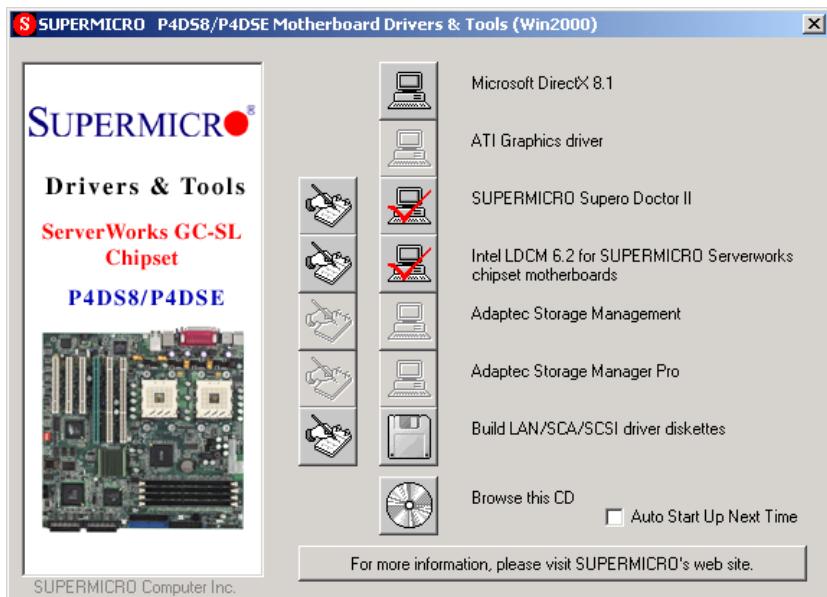


Figure 5-7 Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC742i-420 chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows. Refer to Chapter 2 for instructions on installing the system as a 4U rackmount.

Tools Required

The only tool you will need is a Philips screwdriver.

6-1 Static-Sensitive Devices

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

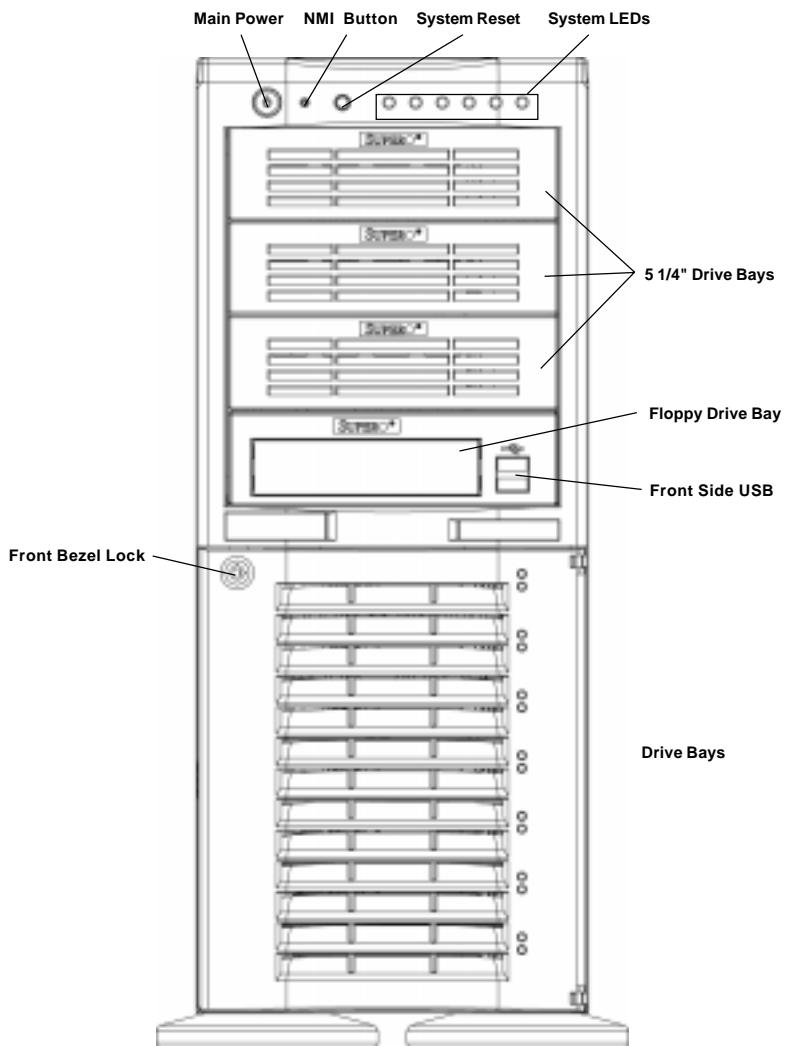
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its anti-static bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View



6-2 Front Control Panel

The front control panel must be connected to the JF1 connector on the motherboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify this connection. Connect the cable from JF1 on the motherboard (making sure the red wire plugs into pin 1) to the appropriate connector on the front control panel PCB (printed circuit board). Pull all excess cabling over to the control panel side of the chassis. The LEDs inform you of system status - see Figure 6-2 for details. Figure 6-3 shows the connections, jumpers and indicators located on the front control panel PCB. See Chapter 5 for details on JF1.

Figure 6-2. System LEDs

- Power**  Indicates power is being supplied to the system.
- HDD**  Indicates IDE hard disk/CD-ROM drive activity.
- NIC1**  1 Indicates network activity on LAN Port 1 (Mb LAN).
- NIC2**  2 Unused (system only has one LAN port).
- Overheat**  Indicates an overheat condition in either one of the processors.
- Power Fail**  Indicates a power supply failure.

6-3 System Fans

One 9-cm chassis cooling fan is located between the motherboard and the hard drive bays (a second fan is optional). This fan is used to provide cool air intake for the system. A heavy duty 12-cm exhaust fan at the rear of the chassis pulls the cooling air through the system and expels the hot air. The power supply has two fans; a primary and a secondary.

Fan Failure

Under normal operation, the one chassis fan, the exhaust fan and the primary power supply fan all run continuously. If the primary power supply fan fails, the power fail LED on the front control panel will illuminate, an alarm will sound and the secondary power supply fan will activate. You can disable the alarm with the reset button on the back of the power supply. The system can operate with only one power supply fan, but you should replace the power supply as soon as possible. The chassis cooling fan(s) is hot-swappable - you can replace it without powering down the system (the exhaust fan is not hot-swappable).

Replacing System Fans

1. Identifying the failed fan:

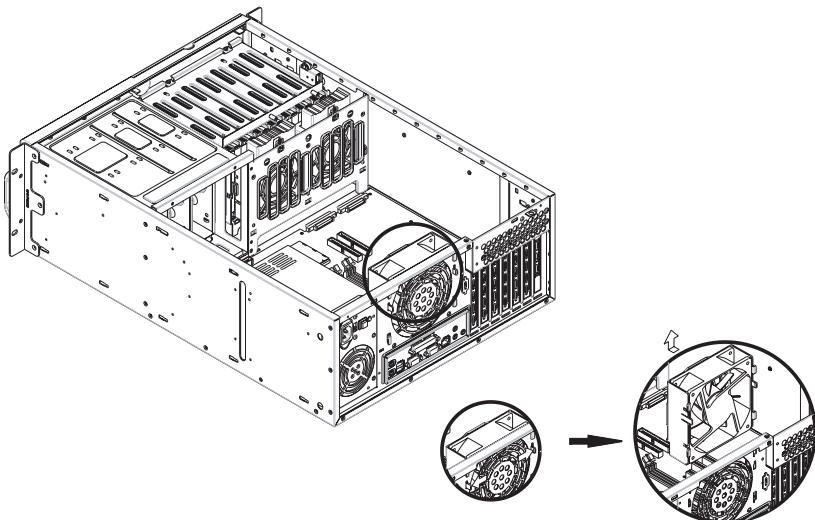
Inspect the back of the chassis to see if the 12-cm exhaust fan has failed. You must power down the system to replace this fan. To replace a failed chassis cooling fan, you must first remove the top/left chassis cover. Remove the two screws from the back lip of the top/left cover. Push in the release tab on the cover and push the cover toward the rear of the chassis until it stops (after moving about $\frac{1}{2}$ inch). Then lift the cover up and off the chassis and see which fan has failed.

2. Removing a hot-plug fan housing:

Depress the locking tab on a chassis cooling fan and pull the unit straight out by the handle. The fan wiring for these two fans has been designed to detach automatically. The 12-cm exhaust fan is also in a housing that can be removed from the chassis (not hot-swappable - see Figure 6-3).

3. Installing a new system fan:

Replace the failed fan with an identical one (available from Supermicro). After the new fan has been installed, reassemble the fan housing and plug the housing back into its slot. You should hear it click into place when fully inserted. Check that the fan is working properly. Finish by replacing the top/left side chassis panel.

Figure 6-3. Removing the 12-cm Exhaust Fan

6-4 Drive Bay Installation

A bezel covers the front of the chassis but does not need to be removed to access the hard drive bays. If you wish to remove the bezel piece, push on the three tabs on the inside left side lip of the front chassis cover. Then slightly swing out the same (left) side of the cover - about $\frac{1}{2}$ inch only. Remove by pushing on the open side of the cover to remove it from the chassis (do not try to swing or pull it straight out after opening the left side).

Hard Drives

After unlocking the drive bay door swing it open to access the hard drive bays. **Note:** You must use standard 1" high, hard drives in the Super-Server 7042S-i.

Installing Components in the Drive Bays

1. Drive bay configuration

The 7042S-i has four upper drive bays and seven lower drive bays. Components such as floppy drives, IDE hard drives and CD-ROM drives can be installed in these bays. (SCSI drives that can fit into a standard IDE drive bay can also be installed, but you will need to install a SCSI controller since the 7042S-i does not include one.)

2. Mounting components in the drive bays

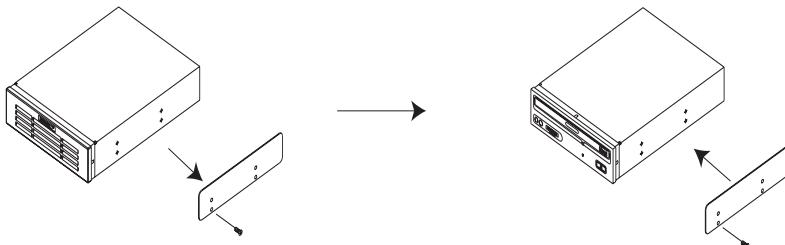
First power down the system and then remove the top/left chassis cover to access the side of the drive bays. With the cover off, remove the two or four screws that secure the drive carrier to the chassis (one side only) then push the entire empty drive carrier out from the back.

Adding a CD-ROM drive: remove the guide plate from right side of the empty drive carrier and screw it into the right side of the CD-ROM drive using the holes provided (see Figure 6-4). Then slide the CD-ROM into the bay and secure it to the chassis with the drive carrier screws you first removed. Attach the power and data cables to the drive. Replace the top/left chassis cover before restoring power to the system.

Adding an IDE, SCSI or floppy drive: to add one of these drives, install it into one of the removed empty drive carriers with the printed circuit board side toward the carrier so that the drive's mounting holes align with those in the carrier. Secure the drive to the carrier with four screws then slide the assembly into the bay and secure it to the chassis with the drive carrier screws you first removed. Attach the power and data cables to the drive. Replace the top/left chassis cover before restoring power to the system.

Note: A red wire typically designates the location of pin 1. You should keep the front door/bezel closed to reduce EMI and noise and to facilitate the airflow inside the chassis.

Figure 6-4. Adding a Component Without a Drive Carrier



6-5 Power Supply

The 7042S-i has a single 420 watt redundant cooling power supply. The redundant cooling function is provided by two fans. The primary fan operates continuously and the secondary fan (along with an alarm and an LED) activate if either 1) the primary fan fails or 2) a temperature threshold is exceeded. If the primary fan fails, the power supply should be replaced as soon as possible. You must power down the system to replace the power supply. The power supply has an auto-switching capability that enables it to automatically sense and operate at any input voltage between 100 to 240V. The power supply is PFC (Power Factor Correction) compliant.

Power Supply Failure

If the primary power supply fan fails an audible alarm will notify you of a power unit failure. Disable the alarm by pressing the alarm reset switch on the back of the power supply. The PWR Fail LED and the LED on the back of the power supply will also illuminate and remain on (until the failed unit has been replaced).

Replacing the Power Supply

1. Accessing the power supply:

After powering down the system, you'll need to remove the left/top chassis cover to access the power supply for removal.

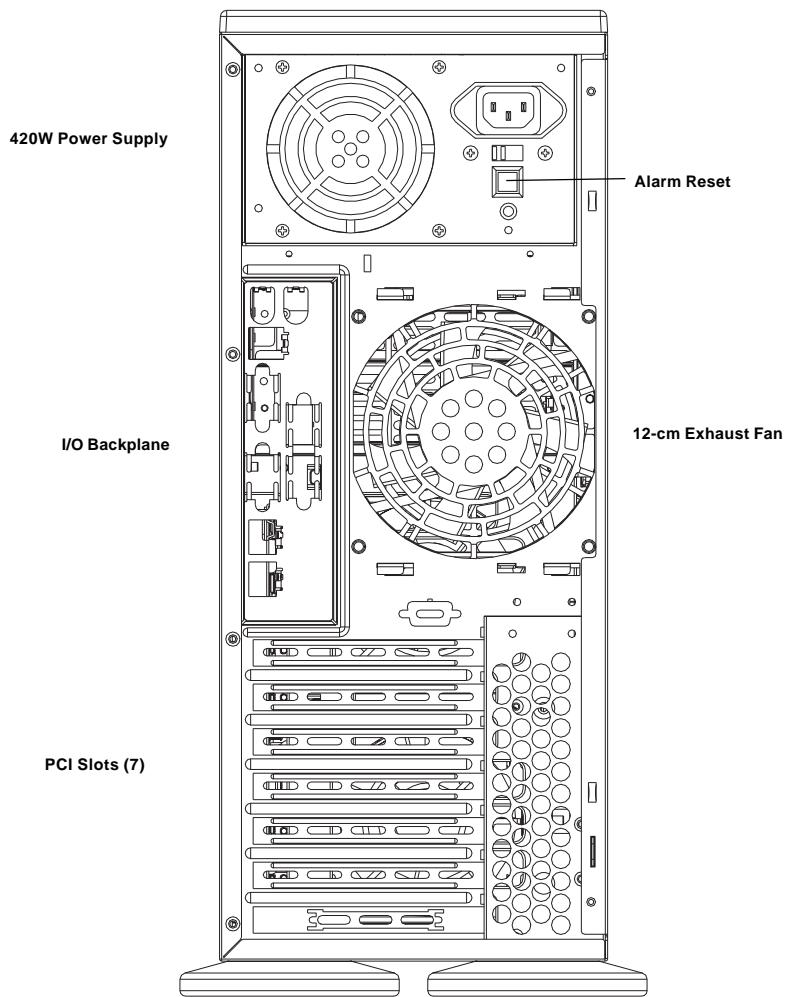
2. Removing the power supply:

First, unplug the power cord from the power supply. Then remove the power supply connectors going to the motherboard. Finally, remove the screws that secure the unit to the mounting brackets in the chassis and then pull the unit completely out.

3. Installing a new power supply:

Replace the failed unit with another unit having the exact same part number (SC742i-420). Gently but firmly push the new unit all the way into the open bay. Secure it to the mounting brackets in the chassis with the screws provided. Connect the two power cables to the motherboard (ATX PWR CONN and J38 connectors) and also the power fail cable to JP13. Finish by replacing the chassis left/top cover and then restoring power to the system.

Figure 6-8. Chassis Rear View



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMIBIOS for the 7042S-i. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to BIOS that are not reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The BIOS ROM stores the system parameters, such as amount of memory, type of disk drives and video displays, etc. BIOS ROM requires very little power. When the computer is turned off, a back-up battery provides power to the BIOS ROM, enabling it to retain the system parameters. Each time the computer is powered-on, the computer is then configured with the values stored in the BIOS ROM by the system BIOS, which gains control when the computer is powered on.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 7-3 gives detailed descriptions of each parameter setting in the Setup utility.

An AMIBIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

7-2 BIOS Features

- Supports Plug and Play V1.0A and DMI 2.3
- Supports Intel PCI (Peripheral Component Interconnect) (PME) local bus specification 2.2
- Supports Advanced Power Management (APM) specification v 1.1
- Supports ACPI
- Supports Flash ROM

AMIBIOS supports the LS120 drive made by Matsushita-Kotobuki Electronics Industries Ltd. The LS120:

- Can be used as a boot device
- Is accessible as the next available floppy drive

AMIBIOS supports PC Health Monitoring chips. When a failure occurs in a monitored activity, AMIBIOS can sound an alarm and display a message. The PC Health Monitoring chips monitor:

- CPU temperature
- Chassis intrusion detector
- Five positive voltage inputs
- Three fan speed monitor inputs

7-3 Running Setup

**Optimal default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the Standard Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

The Main BIOS Setup Menu

Press the <Delete> key during the POST (Power On Self Test) to enter the Main Menu of the BIOS Setup Utility. All Main Setup options are described in this section. The Main BIOS Setup screen is displayed below.

BIOS SETUP UTILITY	
Main	Advanced Chipset PCIPnP Power Boot Security Exit
AMIBIOS Version:	07.00xx
BIOS Build Date:	05/22/02
BIOS ID:	4DS80603
Processor Type:	Intel®Xeon®
Processor Speed:	2400 MHz
System Memory:	2048 MB
System Date	[10:10:00]
System Time	[05/29/02]
← Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
V07.00 (C)Copyright 1985-2001, American Megatrends, Inc.	

Use the Up/Down arrow keys or the <Tab> key to move between the different settings in the above menu.

When the items "System Time", and "System Date" are highlighted, type in the correct time/date in the time field, and then press "Enter". The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format. The time is in also 24-hour format. For example, 5:30 a.m. appears as 05:30:00 and 5:30 p.m. as 17:30:00.

Press the <ESC> key to exit the Main Menu and use the Left/Right arrow keys to enter the other categories of BIOS settings. The next section is described in detail to illustrate how to navigate through the menus.

Note: Items displayed in gray are preset and cannot be selected. Items with a blue arrow are commands, not options (i.e. Discard Changes).

7-4 Advanced BIOS Setup

Choose Advanced BIOS Setup from the AMIBIOS Setup Utility main menu with the Left/Right arrow keys. You should see the following display. Select one of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
<p>Setup Warning Setting items on this screen to incorrect values may cause the system to malfunction!</p> <p>> SuperIO Configuration > IDE Configuration > Floppy Configuration > Boot Settings Configuration > Event Log Configuration > Peripheral Device Configuration > System Health Monitor > Remote Access Configuration</p>						Configure SuperIO Chipset Winbond627F	
						<p>↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit</p>	

V7.00 (C)Copyright 1985-2001, American Megatrends, Inc.

Use the Up/Down arrow keys to select the "Super I/O Configuration line.

When the "Super IO Configuration" line is highlighted, hit "ENTER" to display its menu.

The following Super IO Configuration screen will appear. Here you can select your options for your computer's I/O (Input/Output) devices.

Super IO Configuration

BIOS SETUP UTILITY	
Advanced	
<u>Configure Winbond627F Serial Port(s) and Parallel P.</u>	
Serial Port1 Address	[3F8]
Serial Port1 IRQ	[4]
Serial Port2 Address	[2F8]
Serial Port2 IRQ	[3]
Serial Port2 Mode	[Normal]
Parallel Port Address	[378]
Parallel Port IRQ	[7]
Parallel Port Mode	[ECP]
ECP Mode DMA Channel	[3]
<input type="button" value="↔"/> Select Screen <input type="button" value="↑↓"/> Select Item <input type="button" value="+-"/> Change Option <input type="button" value="F1"/> General Help <input type="button" value="F10"/> Save and Exit <input type="button" value="ESC"/> Exit	
V07.00 (C)Copyright 1985-2001, American Megatrends, Inc.	

The Super IO Configuration includes the following items:

Serial Port 1 Address

This option specifies the base I/O port address of serial port 1. The settings for this item include Disabled, **3F8** and 3E8 and 2E8. Select the desired setting and then press "Enter".

Serial Port 1 IRQ

This option specifies the Interrupt Request address of serial port 1. The settings for this item include Disabled, **4** and 3.

Serial Port 2 Address

This option specifies the base I/O port address of serial port 2. The settings for this item include Disabled, **2F8**, 3E8 and 2E8.

Serial Port 2 IRQ

This option specifies the Interrupt Request address of serial port 2. The settings for this item include Disabled, **4** and **3**.

Serial Port 2 Mode

Use this option to choose the Serial Port 2 Mode. The settings are **Normal**, Sharp-IR, SIR and consumer.

Parallel Port Address

This option specifies the I/O address used by the parallel port. The settings for this item include Disabled, **378**, 278 and 3BC. Select your setting and then press "Enter".

Parallel Port IRQ

This option allows the user to set the Parallel Port IRQ. The settings for this item include 5 and **7**.

Parallel Port Mode

This option specifies the parallel port mode. The settings for this item include Normal, Bi-directional, EPP and **ECP**.

ECP Mode DMA Channel

This option allows the user to set the setting for the ECP Mode of the DMA Channel. The settings for this item include 0, 1 and **3**.

IDE Configuration

Onboard PCI IDE Controller

This option allows the user to enable or disable the integrated IDE Controller. The settings include Disabled, Primary, Second and **Both**. Select "Disabled" to disable the Integrated IDE Controller. Select "Primary" to enable the Primary IDE controller only. Select "Secondary" to enable the Secondary IDE Controller only. Select "Both" to enable both Primary and Secondary IDE Controllers.

Primary IDE Master

When entering "Setup", BIOS automatically detects the presence of IDE devices. This displays the auto detection status of the IDE devices. You can also manually configure the IDE drives by providing the following information:

This option allows the user to configure the IDE devices. When the desired item is highlighted (selected), press "Enter" and the following screen will be displayed:

Type

This option sets the type of device that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. The settings include Not installed, **Auto**, CDROM and ARMD. The "Auto" setting allows BIOS to automatically detect the presence of the IDE controller.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB. The settings are Disabled and **Auto**. Select "Disabled" to disable LBA mode. Select "Auto" to enable LBA mode if your device supports it and is not already formatted with the LBA mode.

Block (Multi-Sector Transfer) Mode

This option sets the block mode multi sector transfers option. The settings include Disabled and **Auto**. Disabled: This option prevents the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device will occur one sector at a time. Auto: This option allows the BIOS to auto detect device support for Multi-Sector Transfers on the specified channel. If supported, this option allows the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to memory. The data transfer to and from the device will occur multiple sectors at a time (if the device supports it).

PIO Mode

IDE PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The settings are: **Auto**, 0, 1, 2, 3 and 4.

DMA Mode

This item allows the users to select the DMA mode. The settings are: **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MWDMA1, MWDM2, UWDMA0, UWDMA1, UWDMA2, UWDMA3 and UWDMA4. Select Auto to auto detect the DMA Mode. Select SWDMA0 through SWDMA2 to set single word DMA0 through DMA2. Select MWDMA0 through MWDMA2 to set Multi-word DMA0 through DMA2. Select UDMA0 through UDMA4 to set Ultra DMA0 through Ultra DMA4.

S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring Analysis and Reporting Technology, a feature that can help predict impending drive failures. The settings are **Auto**, Disabled and Enabled. Select "Enabled" or "Disabled" to enable or disable the S.M.A.R.T. Select "Auto" to auto detect S.M.A.R.T.

32Bit Data Transfer

The settings are Auto, Disabled and **Enabled**. Select "Enabled" or "Disabled" to enable or disable the 32-bit Data Transfer function. Select "Auto" to auto detect the 32-bit Data Transfer function.

ARMD Emulation Type

This option is used to select the ARMD emulation type used when configuring an LS120, MO (Magneto-Optical), or Iomega Zip drive. The settings are **Auto**, Floppy and HardDisk. (ARMD stands for ATA(PI) Removable Media Disk).

Primary IDE Slave

When the system enters "Setup", BIOS automatically detects the presence of IDE devices. This option displays the auto detection status of IDE devices. The settings for "Primary IDE Slave" are the same as those for the "Primary IDE Master".

Secondary IDE Master

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Master" are the same as those for the "Primary IDE Master".

Secondary IDE Slave

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Slave" are the same as those for the "Primary IDE Master".

Hard Disk Write Protect

This item allows the user to prevent the hard disk from being overwritten. The options are **Enabled** or **Disabled**. Disabled allows the drive to be used normally; read, write and erase functions can all be performed. Enabled prevents the hard disk from being erased. This function is effective only when the device is accessed through BIOS.

ATA(PI) Detect Timeout (Seconds)

Set this option to stop the system search for ATAPI devices within the specified number of seconds. The options are 0, 5, 10, 15, 20, 25, 30 and **35** (seconds). Most ATA disk drives can be detected within 5 seconds.

ATA(PI) 80pin Cable Detection

This option allows you to select the mechanism used to detect the 80-pin ATA(PI) cable. The settings are Host, Device and **Host & Device**.

Floppy Configuration

Floppy A

Use this option to specify which of floppy drive you have installed in the A drive. The settings are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", **1.44 MB 3 1/2"** and 2.88 MB 3 1/2".

Floppy B

Use this option to specify which of floppy drive you have installed in the B drive. The settings are **Disabled**, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", 1.44 MB 3 1/2" and 2.88 MB 3 1/2".

Floppy Drive Seek

Use this option to **Enable** or **Disable** the floppy seek routine on bootup.

Boot Settings Configuration

Quick Boot

This option allows the BIOS to skip certain tests that are normally performed on boot up. You can disable the option to speed up boot time. The settings are **Disabled** and **Enabled**.

Quiet Boot

If **Disabled**, this option will cause the normal POST messages to be displayed upon setup. When **Enabled**, the OEM logo is displayed instead of the POST messages. The settings are **Enabled** and **Disabled**.

Add-On ROM Display Mode

Set this option to display add-on ROM (read-only memory) messages. The settings for this option are **Force BIOS** and **Keep Current**. **Force BIOS**

allows the computer to force a third party BIOS to display during system boot. **Keep Current** has the system display AMIBIOS information on bootup.

BootUp Num Lock

This option is used to select the status of the Number Lock function on your keyboard on bootup. The settings are **On** and Off.

BootUp CPU Speed

This option is used set the CPU speed to either **High** or **Low**.

PS/2 Mouse Support

This option specifies whether a PS/2 Mouse will be supported. Settings are **Enabled** and **Disabled**.

TypeMatic Rate

Set this option to select the rate at which the computer repeats a key that is held down. Settings are **Fast** and **Slow**. **Fast**: This sets the rate the computer repeats a key to over 20 times per second. Under normal operations, this setting should not be changed. **Slow**: This sets the rate the computer repeats a key to under 8 times per second.

System Keyboard

This option is to let the system know if a keyboard is **Present** or **Absent**.

Primary Display

This option specifies the type of monitor display you have installed on the system. The settings are **Absent**, **VGA/EGA**, Color 40 x 25, Color 80 x 25 and monochrome.

Parity Check

Use this option to either **Enable** or **Disable** the use of memory parity checking.

Boot to OS/2

This option can be used to boot the system to an OS/2 operating system. The settings are **No** and **Yes**.

Wait for F1 if Error

This settings for this option are **Enabled** and Disabled. Disabled: This prevents the AMIBIOS to wait on an error for user intervention. This setting should be used if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached. If this setting is set, the system will continue to bootup in to the operating system. If 'F1' is enabled, the system will wait until the BIOS setup is entered. Enabled: This option allows the system BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem. This normally happens when upgrading the hardware and not setting the BIOS to recognize it.

Hit "Delete" Message Display

This option tells the system to display or not display the "Hit Delete to Enter Setup" message. The settings are **Enabled** and Disabled.

Cache

This option is for enabling or disabling the internal CPU L1 cache. Settings include Disabled, Write-Thru, **Write-Back** and Reserved. Disabled: This option prevents the system from using the internal CPU L1 cache. This setting should be used to slow the computer system down or to troubleshoot error messages. Write-Thru: This option allows the computer system to use the internal CPU L1 cache as Write-Through cache. Write-Through cache is slower than Write-Back cache. It performs write operations to the internal L1 CPU cache and system memory simultaneously. Write-Back: This option allows the computer system to use the internal CPU L1 cache as Write-Back cache. Write-Back cache is faster than Write-Through cache. Write-Back cache is a caching method in which modifications to data in the cache aren't copied to the cache source until absolutely necessary. Write-back caching is available on all CPUs supported by this BIOS. With these CPUs, write operations stored in the L1 cache aren't copied to main memory until absolutely necessary. This is the default setting.

System BIOS Cacheable

This option enables you to move the system BIOS to the memory cache to improve performance. Settings are **Enabled** and Disabled.

Event Log Configuration

Event Logging

This option **Enables** or **Disables** the logging of events. You can use this screen to select options for the Event Log Configuration Settings. You can access sub screens to view the event log and mark all events as read. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

ECC Event Logging

This option **Enables** or **Disables** the logging of ECC events. The events logged by AMIBIOS are post errors such as a bad BIOS, floppy errors, or hard drive errors.

Clear All Event Logs

This option can be used to tell the system to clear the event log on the next boot up. The settings are **No** and **Yes**.

View Event Log

Highlighting this and pressing <Enter> will allow you to view the unread events from the event log area.

Mark All Events As Read

Highlighting [OK] and pressing <Enter> will mark all events in the log area as having been read. The settings are **OK** and **Cancel**.

Peripheral Device Configuration

Power Lost Control

This option determines how the system will respond when power is reapplied after a power loss condition. Choose **Last State** to automatically start up the system when power is reapplied after an AC power loss. Always Off means you must push the main power button to restart the system after power is restored.

System Health Monitor

The BIOS continuously monitors the health of your system by measuring certain voltage levels and temperatures.

CPU1 Current Temperature/CPU2 Current Temperature

This reading displays the real-time temperatures of CPU1 and CPU2. There are also several voltage level monitors as shown on the System Health Monitor screen.

Remote Access Configuration

Remote Access

This option allows the user to redirect the console (display) through the COM port when enabled. This is useful when two computers are hooked up to a single monitor. The function keys are disabled when this setting is enabled. The settings are "Serial ANSI" and "**Disabled**."

7-5 Chipset Setup

Choose Chipset Setup from the AMIBIOS Setup Utility main menu. The screen is shown below. All Chipset Setup options are described following the screen.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCI PnP	Power	Boot	Security	Exit
C000, 16k Shadow		[Cached]					Options for MCH
C400, 16k Shadow		[Cached]					
C800, 16k Shadow		[Cached]					
CC00, 16k Shadow		[Cached]					
D000, 16k Shadow		[Disabled]					
D400, 16k Shadow		[Disabled]					
D800, 16k Shadow		[Disabled]					
DC00, 16k Shadow		[Disabled]					
Memory Auto Precharge		[Disabled]					
Write Combining for P6-to-PCI		[Disabled]					
Memory Write Posting		[Enabled]					
Scrubbing Enabled		[Enabled]					
Memory Timing Control		[Auto]					
MPS 1.4 Support		[Enabled]					
Hyper-threading		[Enabled]					
Hot Spare Row		[Disabled]					
Hide XIOAPIC PCI Functions		[Yes]					
Watchdog Timer		[Disabled]					
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↲ Select Screen
 ↑↓ Select Item
 Enter Go to Sub Screen
 F1 General Help
 F10 Save and Exit ESC
 Exit

C000, 16k Shadow

C400, 16k Shadow

C800, 16k Shadow

CC00, 16k Shadow

D000, 16k Shadow

D400, 16k Shadow

D800, 16k Shadow

DC00, 16k Shadow

These options specify how the 16 KB of video ROM at each of the above addresses is treated. When Disabled, the contents of the video ROM are not copied to RAM. When Enabled, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM

for faster application. The settings for this option are **Disabled** and **Enabled**. (The optimal settings are **Cached** for C000, C400, C800 and CC00 and **Disabled** for all the other addresses.

Memory Auto Precharge

The options for this setting are **Enabled** and **Disabled**. When enabled, an Auto Precharge for read/writes based on speculative algorithms is performed.

Write Combining for P6-to-PCI

This settings for this option are **Disabled** and **Enabled**. This enables or disables the combining (bursting) of accesses within the PCI memory regions.

Memory Writing Posting

The settings are **Enabled** and **Disabled**.

Scrubbing Enable

The settings are **Enabled** and **Disabled**. Scrubbing writes corrected ECC data back into memory.

Memory Timing Control

Determines how the memory timing is controlled. **Auto** lets BIOS program the memory timing from SPD data. **Manual** allows the user to select the appropriate memory timing.

MPS 1.4 Support

The settings for this option are **Enabled** and **Disabled**.

Hyper-threading

Enables hyper-threading if supported by the operating system. Hyper-threading is a method of creating an additional "virtual" processor by using parallelism to process multiple instructions simultaneously. The settings for this option are **Enabled** and **Disabled**.

Hot Spare Row

The settings for this option are Enabled and **Disabled**. When enabled, the amount of memory available for use is decreased.

Hide XIOAPIC PCI Functions

The settings for this option are **Yes** and **No**.

Watchdog Timer

This option is used to configure the Watchdog timer. Settings are **Disabled**, 2 minutes, 5 minutes, 10 minutes and 15 minutes.

7-6 PCI PnP Setup

Choose PCI/PnP Setup from the AMIBIOS Setup main menu. All PCI/PnP options are described in this section. The PCI/PnP Setup screen is shown below.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCI PnP	Power	Boot	Security	Exit
Plug & Play O/S			[No]				No: lets the BIOS configure all the devices in the system.
Reset Config Data			[No]				Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
PCI Latency Timer			[64]				
Allocate IRQ to VGA			[Yes]				
Palette Snooping			[Disabled]				
PCI IDE BusMaster			[Disabled]				
USB Function			[Enabled]				
Legacy USB Support			[Auto]				
ARMD Emulation Type			[Hard Disk]				
							↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit
V07.00 (C)Copyright 1985-2001, American Megatrends, Inc.							

Plug & Play OS

This option specifies how Plug and Play devices will be configured. The settings are Yes and **No**. No lets BIOS configure all devices in the system. Yes lets the operating system (if supported) configure PnP devices not required for bootup.

Reset Configuration Data

Choosing the Yes setting will cause the PnP configuration data in the BIOS to be cleared on the next boot up. Choosing the **No** setting does not force PnP data to be cleared on the next boot.

PCI Latency Timer

This option specifies the latency timing of the PCI clocks for all PCI devices. Settings include 32, **64**, 96, 128, 160, 192, 224 and 248 PCI clocks.

Allocate IRQ to PCI VGA

This option lets you allocate an interrupt request (IRQ) to the PCI VGA adapter card (if used). The settings are **Yes** and No.

Palette Snooping

When enabled, this option informs PCI devices that an ISA graphics device is installed. The settings are **Disabled** and Enabled. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with your adapter card manuals first, before modifying the default settings in the BIOS.

PCI IDE BusMaster

The settings for this option are **Disabled** and Enabled. Enable to specify that the IDE controller on the PCI bus has bus mastering capabilities.

USB Function

The settings for this option are Disabled and **Enabled**. Disabled prevents the use of the USB ports and Enabled allows the use of the USB ports.

Legacy USB Support

This option allows you to enable support for Legacy USB. The settings are Auto, Enabled and Disabled.

ARMD Emulation Type

This settings for this option are Hard Disk, Auto and Floppy.

7-7 Power Setup

Choose Power Setup from the AMIBIOS Setup main menu. All Power Setup options are described in this section. The Power Setup screen is shown below.

BIOS SETUP UTILITY						
Main	Advanced	Chipset	PCI PnP	Power	Boot	Security
ACPI Aware O/S				[Yes]		
Power Management				[Enabled]		
Power Button Mode				[On/Off]		
Suspend Timeout (Minutes)				[Off]		
						↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit
V07.00 (C)Copyright 1985-2001, American Megatrends, Inc.						

ACPI Aware O/S

This option allows the system to utilize Intel's ACPI (Advanced Configuration and Power Interface) specification. Settings are No and Yes. DOS®, Windows 3.x®, and Windows NT® are examples of non-ACPI aware operating systems. Windows 95®, Windows 98®, Windows ME® and Windows 2000® are examples of ACPI aware operating systems.

Power Management

When enabled, this option displays the following four options relating to power management. The settings are Disabled and Enabled.

Power Button Mode

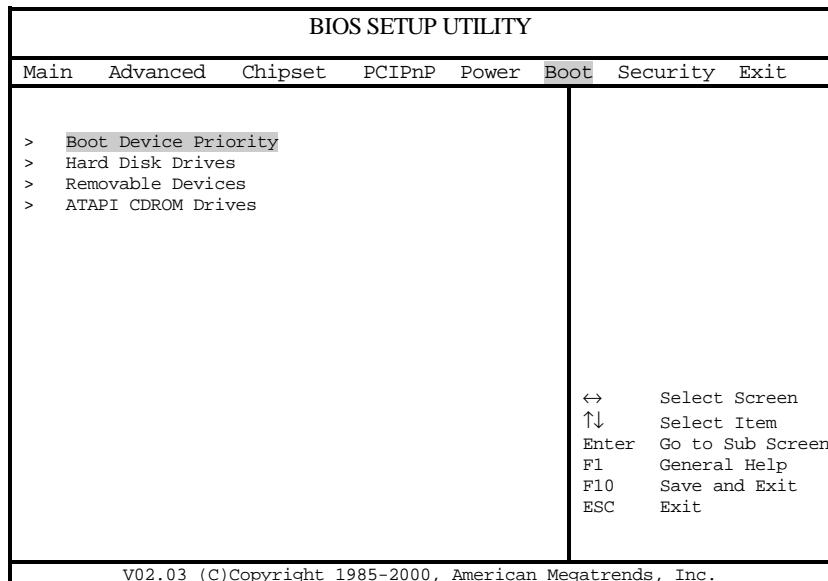
This option allows you to change the function of the chassis power button. The settings are On/Off and Suspend. When set to Suspend, depressing the power button when the system is up will cause it to enter a suspend state.

Suspend Timeout

This option specifies the length of hard disk inactivity time that should expire before entering the power conserving state. The settings are Off, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 (minutes).

7-8 Boot Setup

Choose Boot Setup from the AMIBIOS Setup main menu. All Boot Setup options are described in this section. The Boot Setup screen is shown below.



Boot Device Priority

1st Boot Device

This option is used to specify the order of the boot sequence that will be followed from the available system devices. The settings for the 1st Boot Device are **Removable Device**, ATAPI CDROM, Hard Drive and Intel UNDI PXE-2.0 (build 082).

2nd Boot Device

The settings for the 2nd Boot Device are Removable Device, **ATAPI CDROM**, Hard Drive and Intel UNDI PXE-2.0 (build 082).

3rd Boot Device

The settings for the 3rd Boot Device are Removable Device, ATAPI CDROM, **Hard Drive** and Intel UNDI PXE-2.0 (build 082).

4th Boot Device

The settings for the 4th Boot Device are Removable Device, ATAPI CDROM, Hard Drive and **Intel UNDI PXE-2.0 (build 082)**.

Hard Disk Drives

Use this screen to view the boot sequence of hard drives that have been auto-detected or entered manually on your system.

Removable Devices

Use this screen to view the boot sequence of the removable devices that have been auto-detected or entered manually on your system.

ATAPI CDROM Drives

Use this screen to view the boot sequence of the ATAPI CDROM drives that have been auto-detected or entered manually on your system.

7-9 Security Setup

Choose Security Setup from the AMIBIOS Setup main menu. All Security Setup options are described in this section. The Security Setup screen is shown below.

BIOS SETUP UTILITY									
Main	Advanced	Chipset	PCI PnP	Power	Boot	Security	Exit		
Supervisor Password : Not Installed User Password : Not Installed						Install or Change the password.			
> Change Supervisor Password > Change User Password > Clear User Password									
Boot Sector Virus Protection [Disabled]									
↲ Select Screen ↑ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit									
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.									

Supervisor Password

User Password

AMIBIOS provides both Supervisor and User password functions. If you use both passwords, the Supervisor password must be set first. The system can be configured so that all users must enter a password every time the system boots or when AMIBIOS Setup is executed, using either or both the Supervisor password or User password. The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a 1 – 6 character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must clear CMOS and reconfigure. **Remember your Password!** Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in CMOS.

Change Supervisor Password

This option allows you to change a supervisor password that was entered previously.

Change User Password

This option allows you to change a user password that was entered previously.

Clear User Password

Use this option to clear the user password so that it is not required to be entered when the system boots up.

Boot Sector Virus Protection

This option allows you to enable or disable a virus detection program to protect the boot sector of your hard disk drive. The settings for this option **Disabled** and **Enabled**. If Enabled, AMIBIOS will display a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive.

7-10 Exit Setup

Choose Exit Setup from the AMIBIOS Setup main menu. All Exit Setup options are described in this section. The Exit Setup screen is shown below.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCI/PnP	Power	Boot	Security	Exit
> Exit Saving Changes						Exit system setup with saving the changes.	
> Exit Discarding Changes							
> Load Optimal Defaults							
> Load Fail-Safe Defaults							
> Discard Changes							

Load Optimal Defaults

Highlighting this setting and then pressing <Enter> provides the optimum performance settings for all devices and system features.

Load Failsafe Defaults

Highlighting this setting and then pressing <Enter> provides the safest set of parameters for the system. Use them if the system is behaving erratically.

Discard Changes

Highlighting this setting and then pressing <Enter> will ignore any changes you made in the BIOS Setup program but will not exit the BIOS Setup program.

Appendix A

BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Failure Fixed Disk

Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

Stuck key

Stuck key on keyboard.

Keyboard error

Keyboard not working.

Keyboard Controller Failed

Keyboard controller failed test. May require replacing keyboard controller.

Keyboard locked - Unlock key switch

Unlock the system to proceed.

Monitor type does not match CMOS - Run SETUP

Monitor type not correctly identified in Setup

Shadow Ram Failed at offset: nnnn

Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

System RAM Failed at offset: nnnn

System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

Extended RAM Failed at offset: nnnn Extended memory not working or not configured properly at offset **nnnn**.

System battery is dead - Replace and run SETUP

The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

System CMOS checksum bad - Default configuration used

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

System timer error

The timer test failed. Requires repair of system board.

Real time clock error

Real-Time Clock fails BIOS hardware test. May require board repair.

Check date and time settings

BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Previous boot incomplete - Default configuration used

Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

Memory Size found by POST differed from CMOS

Memory size found by POST differed from CMOS.

Diskette drive A error

Diskette drive B error

Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

Incorrect Drive A type - run SETUP

Type of floppy drive A: not correctly identified in Setup.

Incorrect Drive B type - run SETUP

Type of floppy drive B: not correctly identified in Setup.

System cache error - Cache disabled

RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

CPID:

CPU socket number for Multi-Processor error.

EISA CMOS not writeable

ServerBIOS2 test error: Cannot write to EISA CMOS.

DMA Test Failed

ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

Software NMI Failed

ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

Fail-Safe Timer NMI Failed

ServerBIOS2 test error: Fail-Safe Timer takes too long.

device Address Conflict

Address conflict for specified **device**.

Allocation Error for: device

Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

CD ROM Drive

CD ROM Drive identified.

Entering SETUP ...

Starting Setup program

Failing Bits: nnnn

The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

Fixed Disk n

Fixed disk **n** (0-3) identified.

Invalid System Configuration Data

Problem with NVRAM (CMOS) data.

I/O device IRQ conflict

I/O device IRQ conflict error.

PS/2 Mouse Boot Summary Screen:

PS/2 Mouse installed.

nnnn kB Extended RAM Passed

Where **nnnn** is the amount of RAM in kilobytes successfully tested.

nnnn Cache SRAM Passed

Where **nnnn** is the amount of system cache in kilobytes successfully tested.

nnnn kB Shadow RAM Passed

Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

nnnn kB System RAM Passed

Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

One or more I2O Block Storage Devices were excluded from the Setup Boot Menu

There was not enough room in the IPL table to display all installed I2O block-storage devices.

Operating system not found

Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

Parity Check 1 nnnn

Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

Parity Check 2 nnnn

Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**.

Press <F1> to resume, <F2> to Setup, <F3> for previous

Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

Press <F2> to enter Setup

Optional message displayed during POST. Can be turned off in Setup.

PS/2 Mouse:

PS/2 mouse identified.

Run the I2O Configuration Utility

One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

System BIOS shadowed

System BIOS copied to shadow RAM.

UMB upper limit segment address: nnnn

Displays the address **nnnn** of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

Video BIOS shadowed

Video BIOS successfully copied to shadow RAM.

Notes

Appendix B

BIOS POST Codes

This section lists the BIOS POST (Power On Self Test) codes. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

- 1 long and two short beeps - video configuration error
- 1 continuous long beep - no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to port 80h.

POST Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices

POST Code	Description
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line xxxx*
2Eh	1-3-4-3 RAM failure on data bits xxxx* of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I2O support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts

POST Code	Description
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register

POST Code	Description
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs. One long, two short beeps on checksum failure
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard

POST Code	Description
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for boot block in Flash ROM

POST Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

* If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (**xxxx**) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

Notes

Appendix C

System Specifications

Processors

Single or dual 603-pin Intel® Xeon™ processors to 2.8 GHz at a front side (system) bus speed of 400 MHz.

Note: Please refer to the support section of our web site for a complete listing of supported processors. (<http://www.supermicro.com/TechSupport.htm>)

Chipset

Intel E7500 (Plumas) chipset

BIOS

4 Mb Phoenix® Flash ROM

Memory Capacity

Six 184-pin DDR DIMM sockets supporting up to 4 GB of registered ECC PC1600 (DDR-200) SDRAM

Note: PC2100 memory modules are supported but only at 200 MHz.

Peripheral Drives/Bays

One (1) 3.5" floppy drive

Three (3) 5 1/4" drive bays

Seven (7) 3.5 x 1" drive bays

Expansion Slots

Chassis: Seven (7) I/O chassis slots

Motherboard: three (3) 64-bit 100 MHz PCI-X and three (3) 32-bit 33 MHz PCI slots (six total)

Power Supply

Type: 1 x 420W with +3.3V, +5V, +12V, -5V and -12V main DC outputs and a 5V standby output

Input Voltage: 100-240VAC (w/ \pm 10% tolerance - units are auto-switching capable)

Input Frequency: 50/60 hz

Maximum Output: +5V and +3.3V: 200W total

+5V, +3.3V and -12V: 400W max.

System Cooling

Two (2) 9-cm chassis cooling fans (hot-swappable)

One (1) 12-cm exhaust fan (not hot-swappable)

Operating Environment

Operating Temperature Range: 0 to 35 degrees C

Humidity Range: 5-90%, non-condensing

Motherboard

Model: P4DSE-M

Form Factor: Full ATX

Dimensions: 12 x 11.7 in (305 x 297 mm)

Chassis

Model: SC742S-420

Form Factor: 4U rackmount/tower

Dimensions: (WxHxD as 4U) 6.94" x 17.125 x 24.125 in. (17.6 x 435 x 612.8 mm)

Operating Systems Supported

Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

Weight

Net (Bare Bone): ~40 lbs. (~18 kg.)

Gross (Bare Bone): ~54 lbs. (~24.5 kg.)

Regulations: FCC Class B, CE, UL/CUL, TUV